

Figure 1A

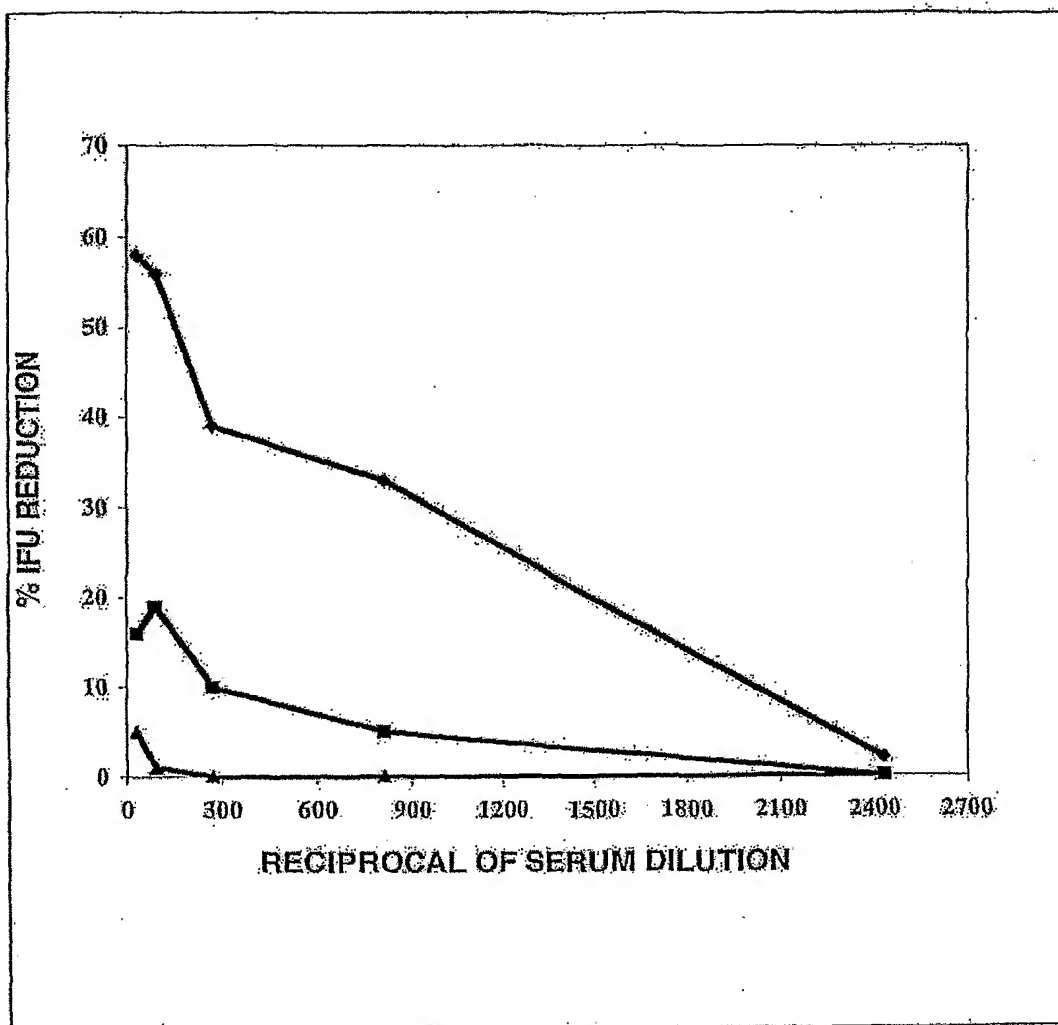
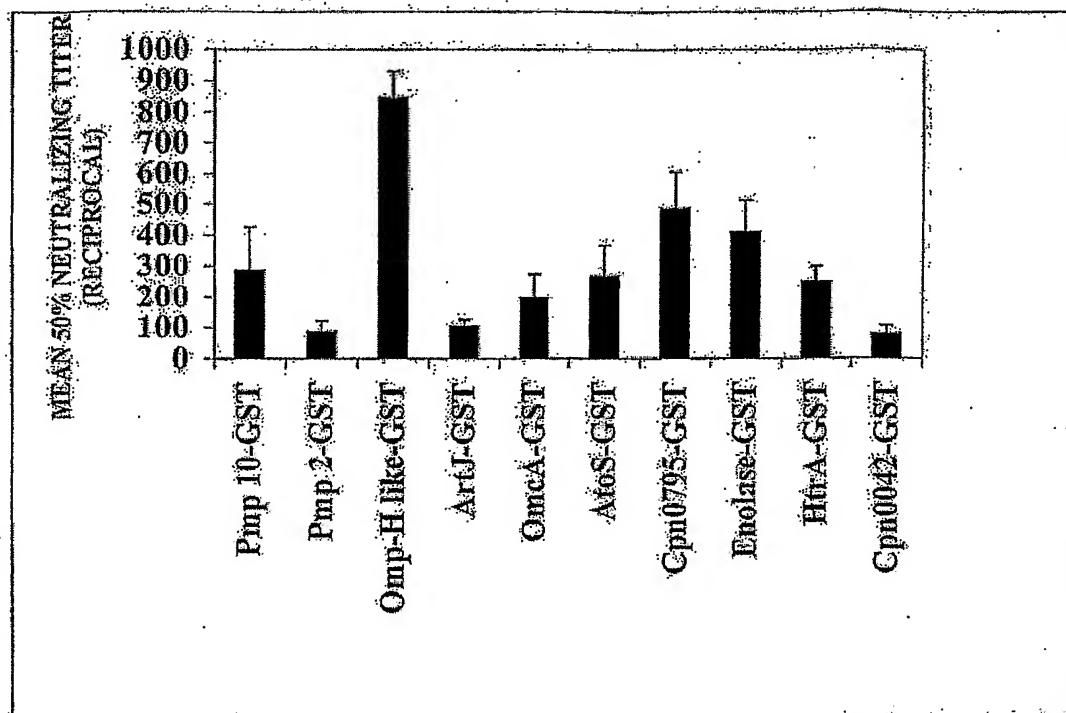


Figure 1B



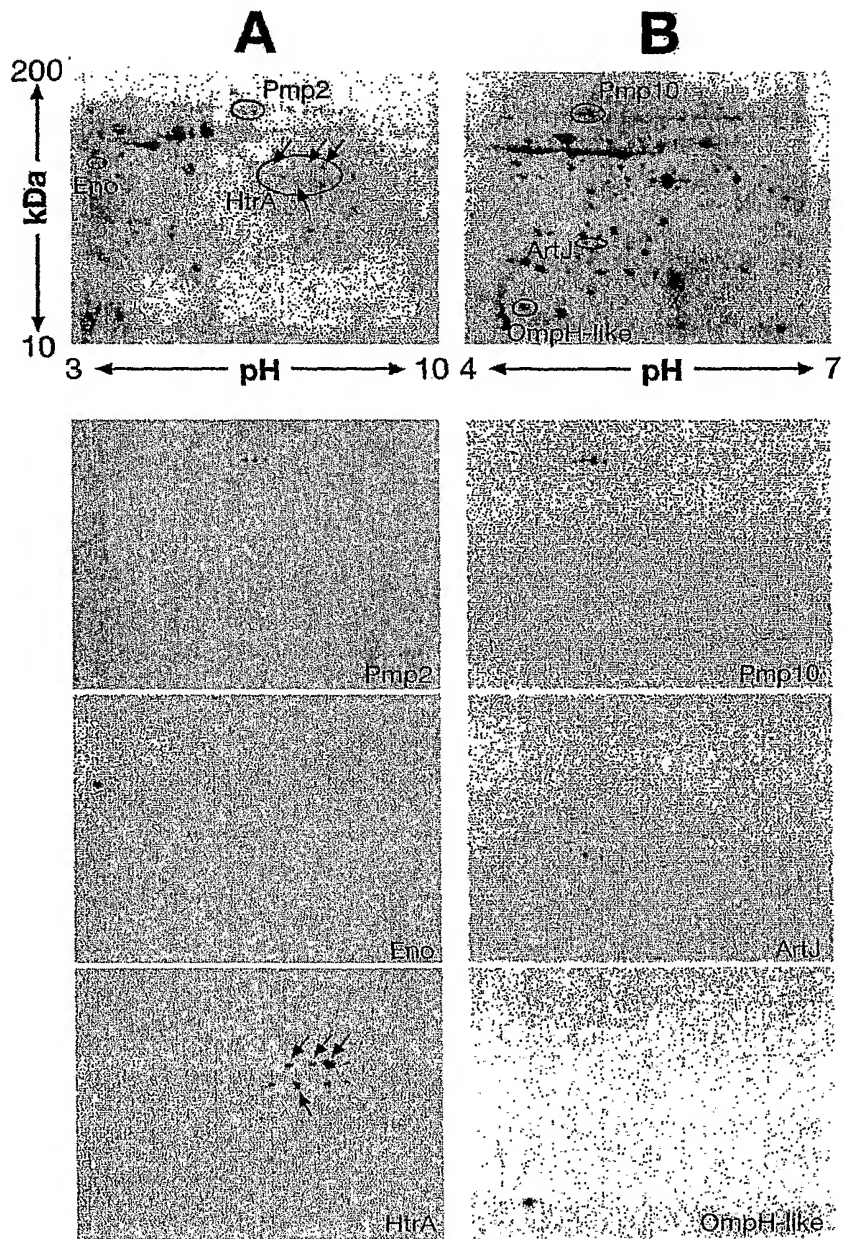


Figure 2

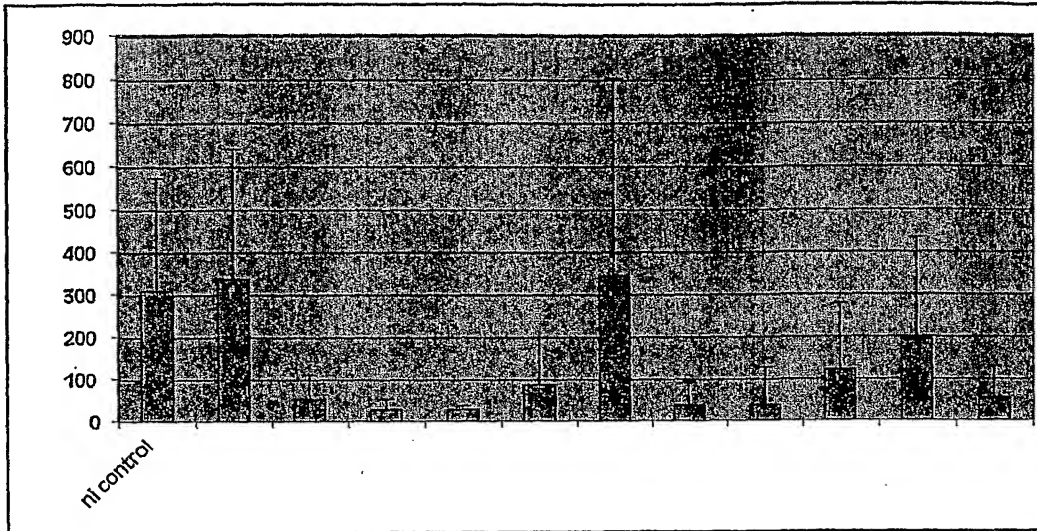


Figure 3. Mean numbers of *C.pneumoniae* IFU recovered from equivalent spleen samples from immunized and mock-immunized hamsters following a systemic challenge. Standard deviation values are shown above the bars. Antigens which induced significant protection are highlighted with an asterisk above the corresponding bar. All antigens were delivered in Freund's adjuvant. n.i. = non immunized controls

Figure 4

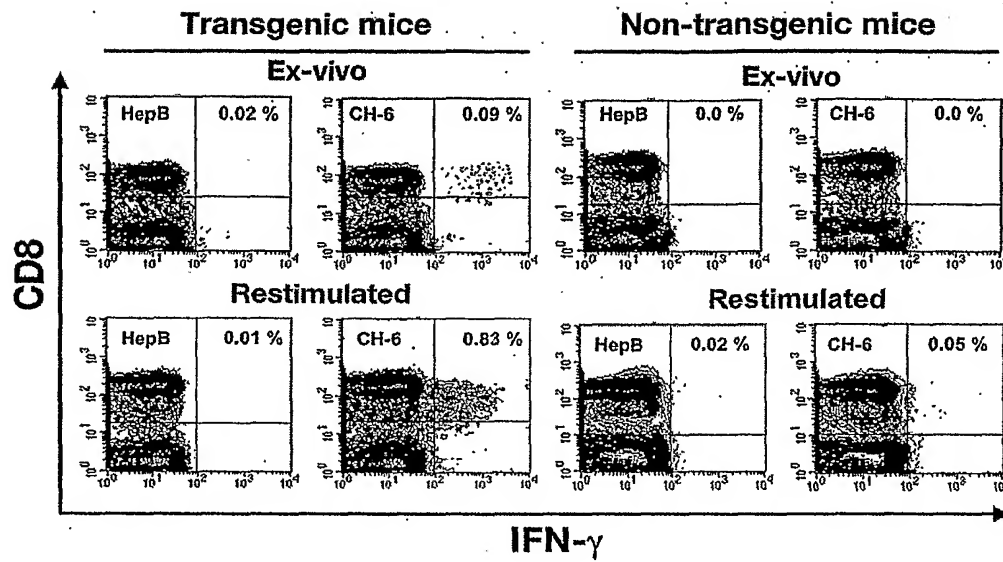
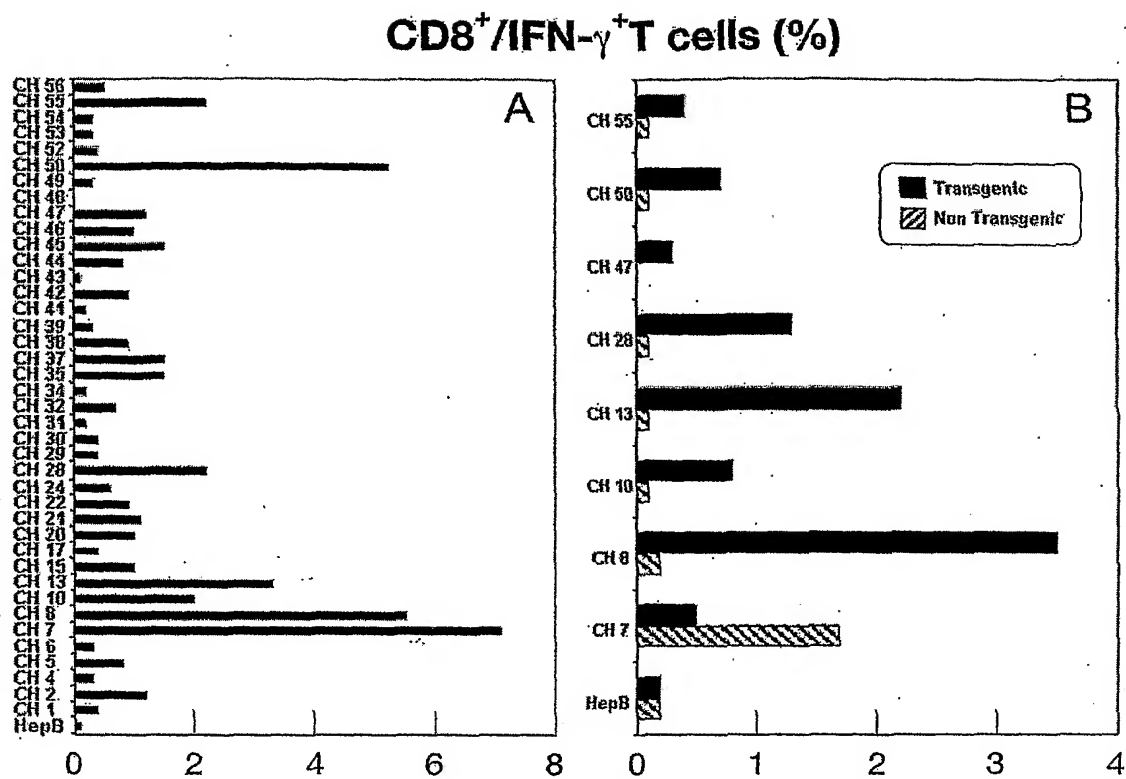
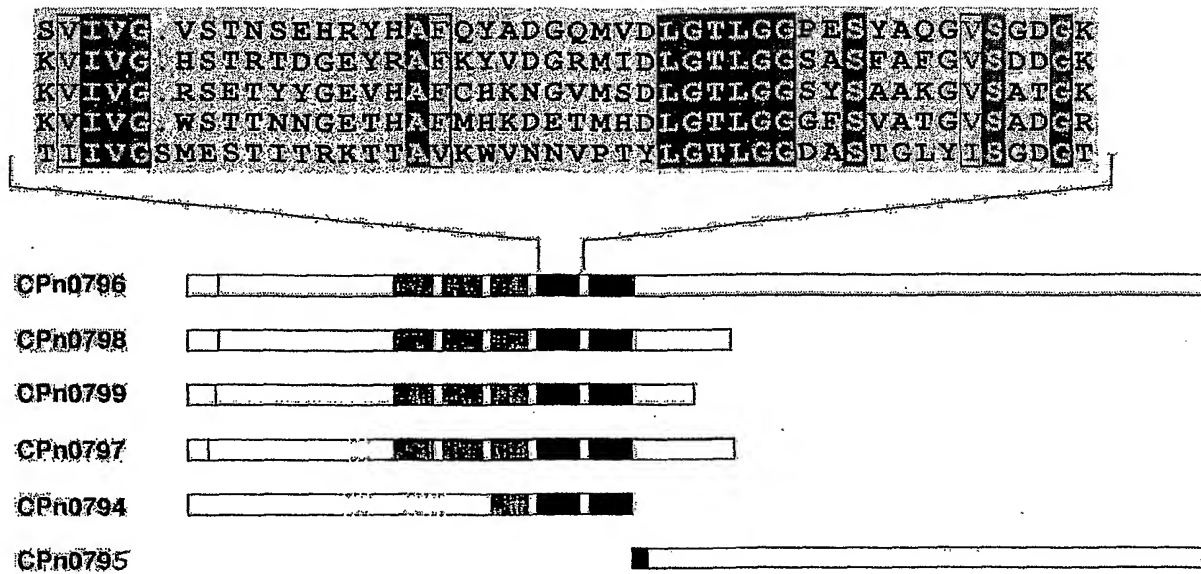


Figure 5





This Alignment shows a new family of proteins expected to constitute a system of antigens probably delivered on the Cpn surface or secreted by a type V (autotransporter) secretion mechanism

Fig. 6

N-terminal alignment

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Cpn0796      MQPCLNMSIVRNSALPLPCLSRSETFFKKVRSHMKFMKVLTPWIYRKDLWVTAFLLLTAIPG 60
Cpn0798      -----MKKTCCQNYRSIGVVFS-----VVLFVLTQT- 27
Cpn0799      -----MAAIKQILRSMLSQSSLLWMVLFSLYSLSG---YCYVITDKPEDDFHSSSAVK 49
Cpn0797      -----MSKKIKVLGHLTLC'FLFRGVLCAAALSN-----IGYASTSQESPQKSIED 46
Cpn0794      -----MSLYQKWWSQLKKSLCYSTVAA-----LIFMIPSQE 32

Cpn0796      SFAHTLVLDIAGEPRH-AAQATGVSGDGK[REDACTED]MKVPDDPF--TVGFQYIDGHLQPLEAVR 119
Cpn0798      LFAGHFIDIG-TSGL-YSWARGVSGDGRV[REDACTED]YEGGN-----KYVDGEKFLLEGLV---- 78
Cpn0799      WDHWGKTTLSRLSNK-KASAKAVSCIGATT[REDACTED]FIKDTWSRTY[REDACTED]RWNYWGTEKELPTSSWV-- 108
Cpn0797      WKGYTFTDLELLSKEGWSEAHAVSGNGSR[REDACTED]ASGAGQGSVT[REDACTED]IWESHLIK[REDACTED]--- 103
Cpn0794      SFADSLIDLNLGLDP----- 62

Cpn0796      PQCSVYPNGITPDGTV[REDACTED]GTNYAIGMGSV[REDACTED]KWVNGK[REDACTED]SE[REDACTED]PMLPDTLD-----SVASAVSADGR 179
Cpn0798      PRSEALVFKASYDGS[REDACTED]GIS-DQDPSCR[REDACTED]KWVNGA[REDACTED]V[REDACTED]IFSEGMQ-----SFAEGVSSDGK 137
Cpn0799      KKS--KATGISSDGS[REDACTED]GIVENELSQSF[REDACTED]TWKNN[REDACTED]YL[REDACTED]PST-WAVQ-----SKAYGISSDGS 165
Cpn0797      --EASSAEGISKDGE[REDACTED]Y[REDACTED]GWSDTREGYT[REDACTED]VFDGRD[REDACTED]K[REDACTED]ATYS-----VARGVSGDGS 162
Cpn0794      ----SVECLSGDGA[REDACTED]FS[REDACTED]GYFTKAGSTPVEYQPFKYDVSKKTF[REDACTED]TILSVETANQSGYAYGISYDGT 107

Cpn0796      --[REDACTED]GNRNINLGAS---V[REDACTED]KWEDD-VITQLPSLPDAM-NACVNGISSDGS[REDACTED]V[REDACTED]TMVDV 233
Cpn0798      T[REDACTED]VCLYSDDTETN---F[REDACTED]KWDET-GMVVLPNLPEDR-HSCAWDASEDGS[REDACTED]V[REDACTED]DAMGS 192
Cpn0799      [REDACTED]V[REDACTED]GS-AKDAWSRT---F[REDACTED]KWTGH-EAQVLP-VGWAV-KSVANSVSANGS[REDACTED]V[REDACTED]SVQDA 218
Cpn0797      [REDACTED]V[REDACTED]VSATARGEDYGVQGVKWEKG-KIKQLKLLPQGL-WSEANAISED[REDACTED]T[REDACTED]V[REDACTED]URGEIS 220
Cpn0794      [REDACTED]TVGTCTSLGAGKYN---GAKWSAD[REDACTED]T[REDACTED]PLTGTGGTSHTEARAISKDT[REDACTED]V[REDACTED]EFSYDA 163

Cpn0796      SWRNT[REDACTED]QWIG--DQLSV[REDACTED]IT--SVASAISTDGT[REDACTED]V[REDACTED]GSE-NADSQT[REDACTED]AYKN 288
Cpn0798      EEIAK[REDACTED]YWKD--GEQHL[REDACTED]SN[REDACTED]P[REDACTED]AKR-SSAHAVSKDGSF[REDACTED]V[REDACTED]GEFT-SEENEV[REDACTED]VYHN 248
Cpn0799      SGILY[REDACTED]KWEK--NTITH[REDACTED]Y[REDACTED]YS--AIAKAVSNNGK[REDACTED]V[REDACTED]V[REDACTED]RSE-TYYGEV[REDACTED]CHKN 273
Cpn0797      RNHIV[REDACTED]KWNK--NAVYS[REDACTED]SV--ASAEAISANGK[REDACTED]V[REDACTED]V[REDACTED]WST-TNNGET[REDACTED]MHKD 275
Cpn0794      SGQPK[REDACTED]QWASGATTVTO[REDACTED]AD[REDACTED]S[REDACTED]GSRSSYAYATSDG[REDACTED]T[REDACTED]V[REDACTED]GSMESTITRKT[REDACTED]KWNV 223

Cpn0796      G[REDACTED]V[REDACTED]S[REDACTED]GFYSLAHAVSSDGS[REDACTED]V[REDACTED]V[REDACTED]VS-----TNSEHRY[REDACTED]QYADGO[REDACTED]V[REDACTED] 343
Cpn0798      G[REDACTED]V[REDACTED]K[REDACTED]DYSVATGVSRDCK[REDACTED]V[REDACTED]GHS-----TRIDGEY[REDACTED]KYVDGR[REDACTED]I[REDACTED] 303
Cpn0799      G[REDACTED]V[REDACTED]S[REDACTED]SYSAAGVSA[REDACTED]TK[REDACTED]V[REDACTED]GMS-----TTANGKL[REDACTED]KYVGR[REDACTED]I[REDACTED]EYSW 328
Cpn0797      ET[REDACTED]H[REDACTED]V[REDACTED]GFSVATGV[REDACTED]SADGR[REDACTED]V[REDACTED]GFS-----AVKTGET[REDACTED]KYAEGE[REDACTED]E[REDACTED] 330
Cpn0794      NVPT[REDACTED]Y[REDACTED]V[REDACTED]GADASTGLYISGD[REDACTED]ET[REDACTED]V[REDACTED]GAANTATV[REDACTED]TNGNOES[REDACTED]MYKDNO[REDACTED]K[REDACTED]----- 277
Cpn0795      [REDACTED]V[REDACTED]K[REDACTED]E[REDACTED]S[REDACTED]C[REDACTED]

Cpn0796      PESYAQGVSGDGK[REDACTED]V[REDACTED]V[REDACTED]CRAQVPSGDW[REDACTED]LCPFQAPSPAPVHGGSTVVT[REDACTED]SQNPRGMVDIN 403
Cpn0798      SASFAFGVSDDGK[REDACTED]T[REDACTED]V[REDACTED]GKFETELGEC[REDACTED]IYLLD----- 337
Cpn0799      KEACANAVSIDGE[REDACTED]T[REDACTED]V[REDACTED]GVQSE----- 349
Cpn0797      EEARVFDISSRGND[REDACTED]T[REDACTED]GSIKT[REDACTED]DAGAERAYLFHIIK----- 365
Cpn0795      TSSTAKTVSPDGK[REDACTED]V[REDACTED]LMERSQIADGSW[REDACTED]MCHTDFSSNNVLFDLN

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FIG. 7

Cpn0796

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1  MKFMKVLTPW IYRKDLWVTA FLLTAIPGSF AHTLV DIA  TGV
51  SGDGRIVIGM KVPDDPFAIT VGFOYIDGHL QPLEAVRPOC SVYPNGITPD
101 GTVIVGTNYA ICMGSVAVKW VNGKVSELPN LPDTLDSVAS AVSADGRVIG
151 GNRNINLGAS VAVKWEDDVI TOLPSLPDAM NACVNGISSD GSIIVGTMVD
201 VSWRNTAVQW IGDQLSVIGT LGGTTSVASA ISTDGTVIVG GSENADSQTH
251 AYAYKNGVMS DIGTLGGFYS LAHAVSSDGS VIVGVSTNSE HRYHAFOYAD
301 GOMVDLGLTG GPESYAQGVN GDGKVIIVGRA QVPSGDWHAF LCPFQAPSPA
351 PVHGGSTVVT SQNPRGMVDI NATYSSLKNS QQQLQRLLIQ HSAKVESVSS
401 GAPSFTSVKG AISKQSPAVQ NDVOKGTFLS YRSQVHGNVO NQQLLTGAFM
451 DWKLASAPKC GFKVALHYGS ODAIVERAAL PYTEOGLGSS VLSGFGGQVQ
501 GRYDFNLGET VVLQPFMGIO VLHLSREGYS EKNVRFVPSY DSVAYSAAAT
551 FMGAHVFAFL SPKMSTAATI GVERDLNSHI DEFKGSVSAM GNFVLENSTV
601 SVLRPFASLA MYYDVRRQQQL VTLNVVMNQO PLTGTLNLVS QSSYNLSF

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Leader peptide	1-31
Or, alternatively:	
Leader peptide 2	1-47
b-propeller domain	32-342
Or, alternatively:	
b-propeller domain2	48-342
linker region	343-364
helix	365-385
beta barrel	386-648

FIG. 8

Alignment of the C-terminal (beta barrell) domains of the proteins encoded by the
C.pneumoniae genes Cpn0795 (7016) and Cpn0796 (7107)

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7106 -----TSSTAKTVSPDGKVLICRSQIADGSWHAFMCHTDFSSNNVLFDLDN
7107 YADGQ-----PESYAQGVSGDGKVLICRAQVPSGDWHAFLCFFQAPSPAPVHGGST
      * *****...* : * *****:***:..*.....* : . * :...

7106 TYKTLRENGRQLNSIFNLQNMMLQRASDHEFTEFGRSNIALGAGLYVNALQNLPNLAQ
7107 VVTSQ--NPRGMVDINATYSSLKNSQQQLQRLLIQHSKAKVESVSSGAPSFTSVKGAISKQ
      . . : . * * : . * . : : . : : : : * . . . . : : . : : *

7106 YFGIAYKIRPKYRLGVFLDHNFFSSHVPNNFNVSHNRLWMGAFIGWQSDALGSSVKVSFG
7107 SP----AVQNDVQKGTFLSYRSQVHG----NVQNQQLLTGAFMDWKLASAPKCGFKVALH
      . : : : . : . : *..... . * . . . ***** * : . * .....

7106 YGKQKATITREQLNTEAGSGESHFEGVAAQIEGRYKSLGGHVVRVQPFLLGLQFVHITRK
7107 YGSQDALVERAALPYTEQGLGSSVLSGFGGQVQGRYDFNLGETVVLQPFMGIIQVLHLSRE
      **.*. * : * * * * * * : .....* : ***. . ** * : ***:*. : ***:

7106 EYTENAVQFPVHYDPIDYSTGVVYLGIGSHIALVDSLHVGTMRMGMEQNFAAHTDRFSGSI
7107 GYSEKNVRFPVSYSVAYSAAATSMGAHVFAASLSPKMSTAATLGVERDLNSHIDEFKGSV
      *: * : * : * * : * : . : * . : . : : * : * : * : * : * : * :

7106 ASIGNFVFEKLDVTHTRAFAEMRVNYELPYLQSLNLILRVNQQLQGVMGFSSDLRYALG
7107 SAMGNFVLENSTVSVLRPFASLAMYDVRQQQLVTLVVMNQQLTGTLVSLVSQSSYNLS
      : : * : * : * : * : * : * : * : * : * : * : * : * : * :

7106 F
7107 F
      *

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FIG. 9